Advantaged Manufacturing – significant progress and more to come

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Advantaged manufacturing session overview

- **Safety** – our core value and first priority

- **Our portfolio** – where we operate and why it is advantaged

- Delivering value through *business improvement plans*
  - Globally consistent business improvement plans, executed locally
  - Staffed by world class capability
  - Competitively benchmarked and performance managed
Refining – high graded and advantaged portfolio

11 refineries on 4 continents

~1.9 refining capacity (mbd)

>$1bn underlying improvement 2014-16

Configuration advantage

Location advantage

Feedstock advantage and flexibility

Synergies with marketing and supply & trading

BP operated refineries
Non-operated refineries

Underlying earnings growth at constant refining environment, including $14.0/bbl BP Refining Marker Margin, $15/bbl WTI-WCS crude differential and normalised turnaround levels

(1)
Underlying earnings growth¹

$bn

2016

Advantaged feedstocks

Commercial optimisation

2021

Reliability & efficiency

Advantaged feedstocks

Commercial optimisation

~$1bn

Significant progress and more to come

Business Improvement Plans delivering sustainable value

Reliability & efficiency

Advantaged feedstocks

Commercial optimisation

~$1bn

Refining growth¹
still to come

(1) At constant refining environment, including $14.0/bbl BP Refining Marker Margin, $15/bbl WTI-WCS crude differential and normalised turnaround levels
Reliability and efficiency

Reliability: reaching top quartile
Solomon availability

Efficiency: ~20% improvement in non-energy cash costs

Top quartile
Solomon availability

(1) 2017 Portfolio basis
(2) At a 2014 environment
Advantaged feedstocks

- Advantaged location and configuration
- Coordination with supply and trading to identify and access feedstocks
- Flexibility to optimise feedstock mix

~45% advantaged feedstocks1 in 2021

Increase in advantaged feedstocks1

Advantaged feedstocks processed as a % of throughput; BP operated sites only, 2017 portfolio basis
Commercial optimisation

- Higher utilisation
- Improved production planning and modelling
- Strong linkage to supply and trading

Utilisation improvement equivalent to adding a medium sized US refinery

Reaching top quartile utilisation

(1) Equivalent distillation capacity based process utilisation excluding turnarounds, 2017 portfolio basis
More competitive, more resilient and more to come

- Competitively advantaged portfolio
- Globally consistent strategic programmes, locally executed
- >$1bn earnings improvement in 2016 versus 2014
- ~$1bn earnings growth still to come

Top quartile net cash margin

\[ \text{Net Cash Margin} = \text{Gross product value} - \text{raw material costs and operating expenditure}. \]

At 2014 price set, 2017 portfolio basis, constant $15/bbl light-heavy differential, and normalised turnaround levels
Petrochemicals – technology enabled growth

- **16** sites in **10** countries
- **18.6m** tonnes p.a. capacity
- **>500** patents on proprietary technology

**Products and Technologies:**
- Purified Terephthalic Acid (PTA)
- Paraxylene (PX)
- Acetyl derivatives (Acetic Acid and Methanol)
- Olefins and Derivatives (O&D) and Specialities

**Technological Highlights:**
- 500 patents on proprietary technology
- 16 sites in 10 countries
- 18.6 million tonnes per annum capacity

**Geographical Distribution:**
- PX
- PTA
- Acetyl derivatives
- O&D and Specialities
Petrochemicals market dynamics

- Demand growth of 4 - 6% per annum
- Reduced utilisation due to capacity overbuild
- Utilisation rates forecast to improve >7% over the next 5 years

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**Continued demand growth for our products**
Indexed

- **PTA/PX**
- **Acetic Acid**

**Global PTA & Acetic Acid industry utilisation**

(1) Source: IHS and PCI
Repositioning and growing earnings

Business Improvement Plans delivering sustainable value

- **Efficient operations**
- **Technology deployment & licensing**
- **Commercial optimisation & feedstock**

Significant earnings growth

Double digit pre-tax returns

Pre-tax earnings growth – 2016 to 2021

$bn

2016

- Efficient operations
- Technology deployment & licensing
- Commercial optimisation & feedstock

2021

Environment

(1) At 2016 foreign exchange environment
(2) Petrochemicals environment margins
Efficient operations

Reducing costs
Cash cost per tonne

~20% reduction in cash cost / tonne 2016 - 2021

Right sizing the organisation
Year end roles

~25% reduction

~15% reduction
Technology deployment and licensing

PTA investment lowers variable costs
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$60/tonne
cost advantage on
PTA vs conventional
technology

Licenses won 2012 – 2017
~80% licence bids won

PTA ~6 mte
PX ~6 mte

China
India
Oman
S Korea

Industry
China
Europe
US
Commercial optimisation and feedstock

- Sales growth - improved utilisation
- Feedstock sourcing
- Debottlenecks and speciality product growth
- Transition to lower carbon future

Improving asset performance

Utilisation\(^1\) %

- >10% increase in sales volumes 2016 - 2021

\(^1\) Utilisation = production volumes / capacity
More resilient, more competitive and more to come

Repositioning the business and growing earnings

- Access to growth products
- Operations excellence enabled by industry-leading proprietary technology
- Repositioning cost structure to improve bottom-of-cycle resilience
- Significant earnings growth that enables delivery of double digit pre-tax returns

Petrochemicals cash breakeven\(^1\)

 Indexed

>40% reduction

\(^1\) Breakeven cash contribution margin based on BP estimates ($/tonne)

>40% reduction in cash breakeven\(^1\)
2014 - 2018
Advantaged Manufacturing – key messages

SAFETY
#1 Core value

REFINING
Top quartile net cash margin

PETROCHEMICALS
>40% Reduction in cash breakeven by 2018

BUSINESS IMPROVEMENT PLANS
Globally consistent, executed locally

ADVANTAGED MANUFACTURING
>$1 bn underlying earnings growth still to come

(1) At constant refining environment, including $14.0/bbl BP Refining Marker Margin, $15/bbl WTI-WCS crude differential and normalised turnaround levels